What is claimed is:

1. A method for heat treatment of semiconductor films upon thermally susceptible non-conducting substrates comprises:

(a) installing induction coil in close proximity to semiconductor films on non-conducting substrates lying on a susceptor, wherein the winding configuration of said induction coil is set in such a way that the current direction of the inductor is aligned parallel to the in-plane direction of said semiconductor films;

(b) inducing an alternating current to said induction coil to introduce alternating magnetic field to said semiconductor films heated by said susceptor to the extent that the semiconductor films can be induction-heated.

2. The method of claim 1 wherein said semiconductor films are silicon films of the nature of amorphous silicon films or crystalline silicon films, said thermally susceptible non-conducting substrates being glass and plastic substrates.

3. The method of claim 2 wherein said silicon films are amorphous films deposited onto the glass for the purpose of crystallization, or polycrystalline films ion-implanted with a dopant (n-type or p-type) for the purpose of electrical activation.

4. The apparatus of claim 1 wherein the alternating frequency of said alternating current of said induction coil ranges from about 10 Hz to about 10 MHz.

5. The method of claim 2 wherein said crystallization of amorphous silicons is solid phase crystallization, metal-induced crystallization, and/or metal-induced lateral crystallization.

6. An apparatus for heat treatment of semiconductor films upon thermally susceptible non-conducting substrates comprising:

(a) induction coils installed in close proximity to semiconductor films on non-

conducting substrates, wherein the winding configuration of said induction coils is set in such a way that the current direction of the inductor is aligned parallel to the in-plane direction of said semiconductor films;

(b) a susceptor installed below said non-conducting substrates, wherein the susceptor heats the semiconductor films to the extent that the semiconductor films can be induction-heated.

7. The apparatus of Claim 6 wherein said semiconductor films are silicon films deposited on the glass substrate in the form of either amorphous state crystallizing into polycrystalline in the case of crystallization heat treatment, or polycrystalline state implanted by dopants (n or p type) in the case of dopant activation heat treatment.

8. The apparatus of Claim 6 wherein said susceptor is made of metal or graphite with a high conductivity providing the *in-situ* heating capability to the susceptor under the alternating magnetic field through a heating mechanism of eddy currents (i.e., induction heating).

9. The apparatus of Claim 6 wherein said susceptor is made of an electrically non-conductive material preventing the susceptor from being heated under the alternating magnetic field, the susceptor being designed to be independently heated using an external heat source such as a resistance or lamp heater.

10. The apparatus of Claim 6 wherein magnetic cores made of magnetic metals or ferrite are added around the induction coils for the purpose of strengthening the magnetic field at lower power and allowing the concentration of said alternating magnetic flux in close proximity of the semiconductor films.

11. The apparatus of Claim 10 wherein the magnetic core has a plate shape to encapsulate an upper portion of a pancake-shaped flat induction coil so that external magnetic flux is generated from the magnetic poles downwardly to the surface of the silicon film located underneath the induction coils.

12. The apparatus of Claim 10 wherein the magnetic core has a horse shoe-shape

which is wound by a multi-turn induction coil located above the semiconductor films allowing exposure of the semiconductor films to external magnetic flux traveling between two magnetic poles.

13. The apparatus of Claim 10 wherein the magnetic core has a "C"-shape which is wound by multi-turn induction coil positioned such that said non-conducting substrates are located horizontally at the middle point of the air-gap of the magnetic poles of the magnetic core.

14. The apparatus of Claim 13 wherein a multiple number of non-conducting substrates are inserted into a loading cassette and are exposed to said magnetic flux simultaneously during a single process run for increasing the production of heat treated substrates.

15. The apparatus of Claim 6 wherein said susceptor is linearly or rotationally moved to enhance the uniformity of the process.

16. A method for heat treatment of metallic or non-metallic films upon glass substrates comprises;

(a) installing induction coils in close proximity to films on glass substrates, the winding configuration of said induction coils being such that the current direction of the inductor is aligned parallel to the in-plane direction of said films,

(b) inducing an alternating current to said induction coil to introduce alternating magnetic field to said films for the modification of microstructure of said films at a temperature of said glass substrate that is lower than 500°C.